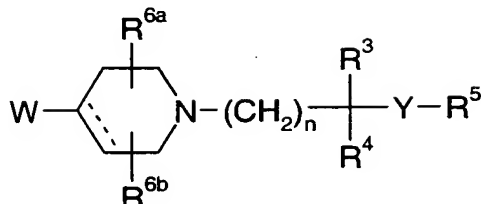


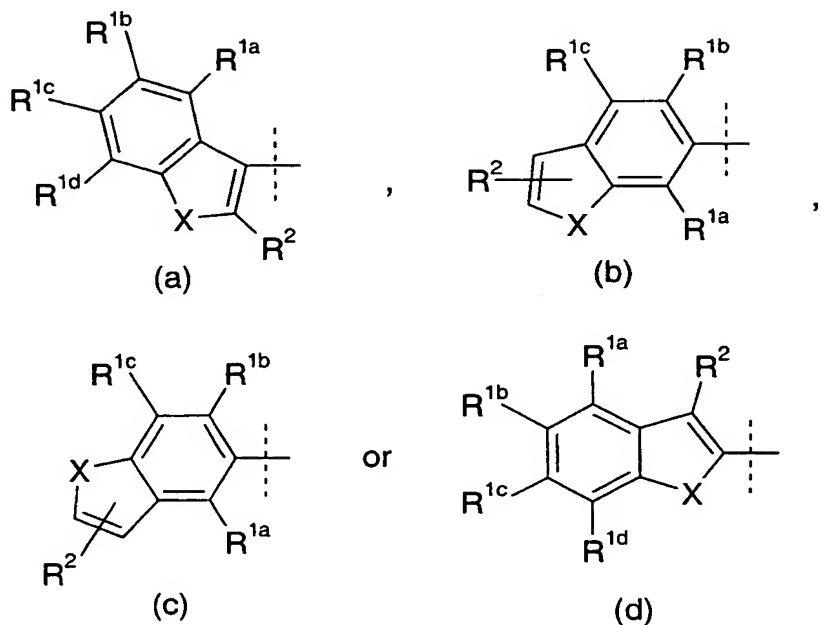
We claim:

1. A compound of the formula:



5 wherein:

W represents:



X represents O or S;

Y represents -C(=O)-, -CH(OH)-, -CH₂-, S, SO, or SO₂;

10 ----- represents a single or a double bond;

n is 1, 2, 3 or 4;

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R² are each independently H, F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, -NR₇R₈, CN or phenyl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I,

15 OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN;

R₃ represents H, OH, hydroxy(C₁-C₆)alkyl, C₁-C₆ alkyl, or C₁-C₆ alkoxy;

-105-

R₄ represents aryl, heterocycle, C₃-C₈ cycloalkyl, aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or heterocycle substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN;

R₅ represents aryl, heterocycle, C₃-C₈ cycloalkyl, aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, hydroxy(C₁-C₆)alkyl, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; heterocycle substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, hydroxy(C₁-C₆)alkyl, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or C₃-C₈ cycloalkyl substituted with C₁-C₄ alkyl;

R_{6a} and R_{6b} are each independently H or C₁-C₃ alkyl;

R₇ and R₈ are each independently H, C₁-C₆ alkyl, aryl or aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or a pharmaceutically acceptable salt thereof.

2. A compound according to claim 1 wherein X is O.

3. A compound according to claim 1 wherein X is S.

4. A compound according to any one of claims 1 to 3 wherein R₂ is H.

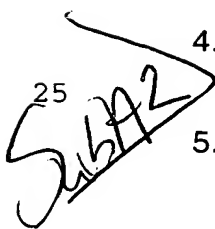
5. A compound according to any one of claims 1 to 4 wherein n is 2.

6. A compound according to any one of claims 1 to 5 wherein R₃ is H.

7. A compound according to any one of claims 1 to 5 wherein R₃ is methyl.

25

30



-106-

Sub A2
8. A compound according to any one of claims 1 to 7 wherein R₄ is 2-pyridyl.

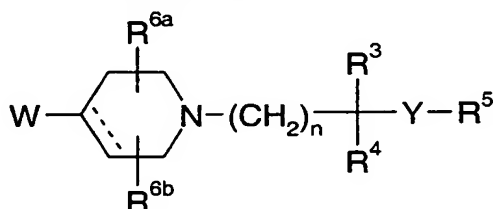
5 9. A compound according to any one of claims 1 to 8 wherein ----- is a double bond.

10. A compound according to any one of claims 1 to 9 wherein Y is -CO-.

11. A compound which is selected from the group consisting of:

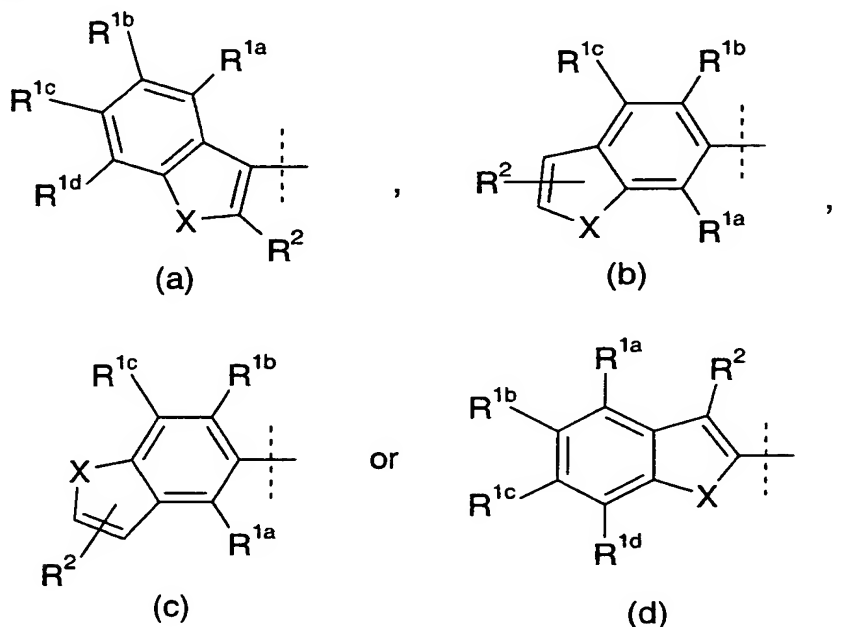
- 10 a) 4-(6-benzo(b)thiophene-1,2,3,6-tetrahydropyridyl)-1-cyclohexyl-2-(2-pyridyl) butan-1-one;
- b) 4-(5-benzo(b)thiophene-1,2,3,6-tetrahydropyridyl)-1-cyclohexyl-2-(2-pyridyl) butan-1-one;
- 15 c) 4-(2-benzo(b)thiophene-1,2,3,6-tetrahydropyridyl)-1-cyclohexyl-2-(2-pyridyl) butan-1-one; and
- d) 4-(3-benzo(b)thiophene-1,2,3,6-tetrahydropyridyl)-1-cyclohexyl-2-(2-pyridyl) butan-1-one; or a pharmaceutically acceptable salt thereof.

12. A method of inhibiting the reuptake of serotonin and antagonizing the 5-HT_{1A} receptor which comprises administering to a subject in need of such treatment an effective amount of a compound of the formula:



wherein:

W represents:



X represents O or S;

Y represents -C(=O)-, -CH(OH)-, -CH₂-, S, SO, or SO₂;

----- represents a single or a double bond;

n is 1, 2, 3 or 4;

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R² are each independently H, F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, -NR₇R₈, CN or phenyl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN;

-108-

R_3 represents H, OH, hydroxy(C_1 - C_6)alkyl, C_1 - C_6 alkyl, or C_1 - C_6 alkoxy;

R_4 represents aryl, heterocycle, C_3 - C_8 cycloalkyl, aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C_1 - C_6 alkyl, C_1 - C_6 alkoxy, halo(C_1 - C_6)alkyl, phenyl, NO_2 , NH_2 , or CN; or heterocycle

5 substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C_1 - C_6 alkyl, C_1 - C_6 alkoxy, halo(C_1 - C_6)alkyl, phenyl, NO_2 , NH_2 , or CN;

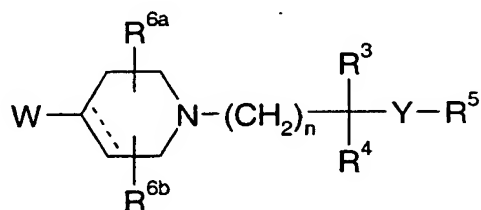
R_5 represents aryl, heterocycle, C_3 - C_8 cycloalkyl, aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C_1 - C_6 alkyl, C_1 - C_6 alkoxy, hydroxy(C_1 - C_6)alkyl, halo(C_1 - C_6)alkyl, phenyl, NO_2 , NH_2 , or CN; heterocycle substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C_1 - C_6 alkyl, C_1 - C_6 alkoxy, hydroxy(C_1 - C_6)alkyl, halo(C_1 - C_6)alkyl, phenyl, NO_2 , NH_2 , or CN; or C_3 - C_8 cycloalkyl substituted with C_1 - C_4 alkyl;

15 R_{6a} and R_{6b} are each independently H or C_1 - C_3 alkyl;

R_7 and R_8 are each independently H, C_1 - C_6 alkyl, aryl or aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C_1 - C_6 alkyl, C_1 - C_6 alkoxy, halo(C_1 - C_6)alkyl, phenyl, NO_2 , NH_2 , or CN; or a pharmaceutically acceptable salt thereof.

20

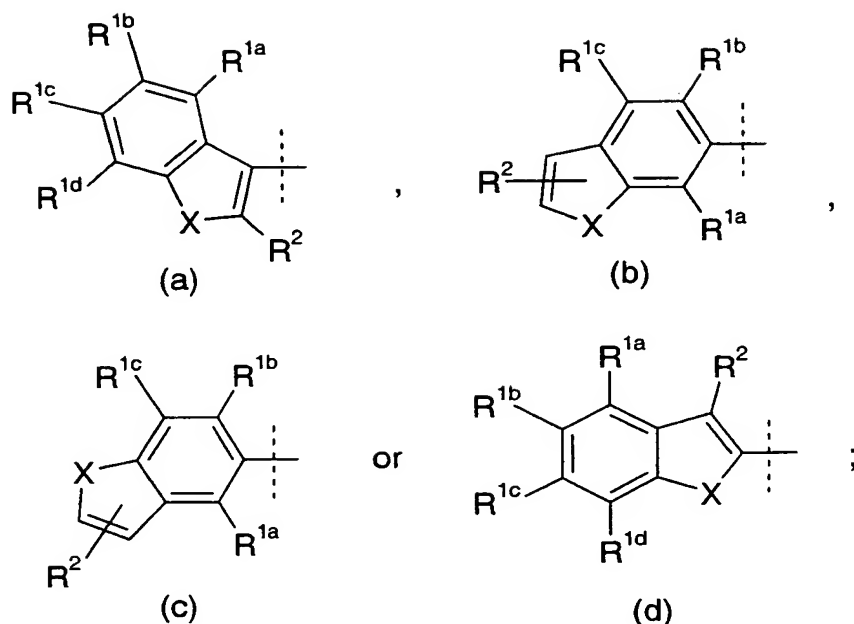
13. A method of potentiating the action of a serotonin reuptake inhibitor comprising administering to a subject in of such treatment a compound formula:



25 wherein:

W represents:

-109-



X represents O or S;

Y represents -C(=O)-, -CH(OH)-, -CH₂-, S, SO, or SO₂;

----- represents a single or a double bond;

- 5 n is 1, 2, 3 or 4;
- R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R² are each independently H, F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, -NR₇R₈, CN or phenyl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN;
- 10 R₃ represents H, OH, hydroxy(C₁-C₆)alkyl, C₁-C₆ alkyl, or C₁-C₆ alkoxy;
- R₄ represents aryl, heterocycle, C₃-C₈ cycloalkyl, aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or heterocycle substituted with from 1 to 3 substituents selected from the group consisting of F,
- 15 Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN;
- R₅ represents aryl, heterocycle, C₃-C₈ cycloalkyl, aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, hydroxy(C₁-C₆)alkyl, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN;
- 20 heterocycle substituted with from 1 to 3 substituents selected from the group

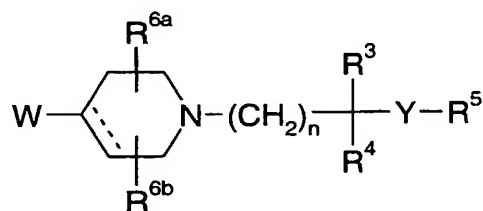
-110-

consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, hydroxy(C₁-C₆)alkyl, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or C₃-C₈ cycloalkyl substituted with C₁-C₄ alkyl;

R_{6a} and R_{6b} are each independently H or C₁-C₃ alkyl;

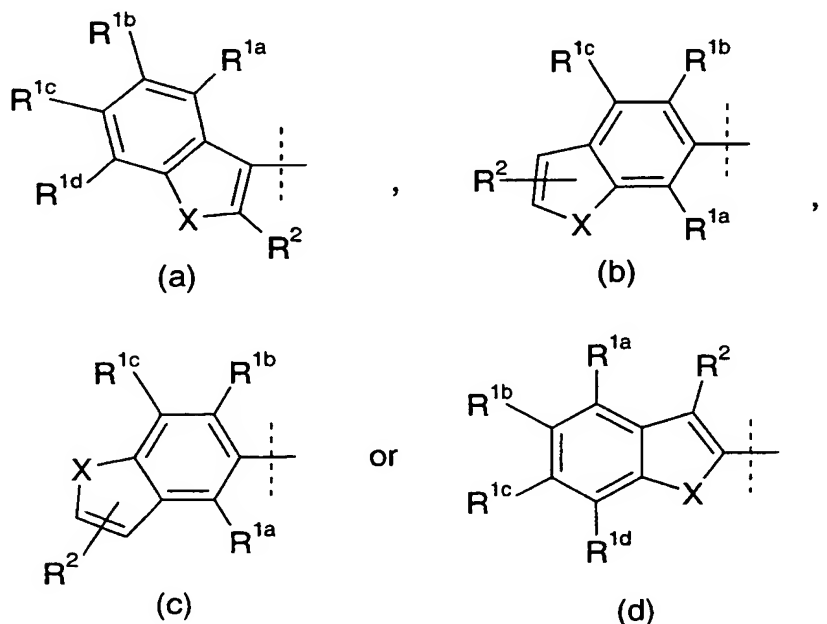
- 5 R₇ and R₈ are each independently H, C₁-C₆ alkyl, aryl or aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or a pharmaceutically acceptable salt thereof.

- 10 14. A method of treating depression comprising administering to a subject in need thereof an effective amount of a compound of formula:



wherein:

W represents:



15 X represents O or S;

-111-

Y represents -C(=O)-, -CH(OH)-, -CH₂-, S, SO, or SO₂;

----- represents a single or a double bond;

n is 1, 2, 3 or 4;

R^{1a}, R^{1b}, R^{1c}, R^{1d}, and R² are each independently H, F, Cl, Br, I, OH, C₁-C₆ alkyl,

- 5 C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, -NR₇R₈, CN or phenyl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN;

R₃ represents H, OH, hydroxy(C₁-C₆)alkyl, C₁-C₆ alkyl, or C₁-C₆ alkoxy;

- 10 R₄ represents aryl, heterocycle, C₃-C₈ cycloalkyl, aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or heterocycle substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN;

- 15 R₅ represents aryl, heterocycle, C₃-C₈ cycloalkyl, aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, hydroxy(C₁-C₆)alkyl, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; heterocycle substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, hydroxy(C₁-C₆)alkyl, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or C₃-C₈ cycloalkyl substituted with C₁-C₄ alkyl;

R_{6a} and R_{6b} are each independently H or C₁-C₃ alkyl;

- 25 R₇ and R₈ are each independently H, C₁-C₆ alkyl, aryl or aryl substituted with from 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, C₁-C₆ alkyl, C₁-C₆ alkoxy, halo(C₁-C₆)alkyl, phenyl, NO₂, NH₂, or CN; or a pharmaceutically acceptable salt thereof.

15. A pharmaceutical composition comprising an effective amount of a compound as claimed in any one of claims 1 to 11 in combination with a pharmaceutically acceptable carrier, diluent or excipient.

-112-

Sub A3
16. The use of a compound as claimed in any one of claims 1 to 11 for the manufacture of a medicament for inhibiting the reuptake of serotonin, antagonizing the 5-HT_{1A} receptor, and antagonizing the 5-HT_{2A} receptor.

5 17. The use of a compound as claimed in any one of claims 1 to 11 for inhibiting the reuptake of serotonin, antagonizing the 5-HT_{1A} receptor, and antagonizing the 5-HT_{2A} receptor.

18. The use of a compound as claimed in any one of claims 1 to 11 for the manufacture of a medicament for the treatment of depression.

10 19. The use of a compound as claimed in any one of claims 1 to 11 for the treatment of depression.

20. A pharmaceutical composition comprising a compound as claimed in any one of claims 1 to 11 for use in the treatment of depression.